Myriad Urban & Rural Uses of Bluetooth-Derived Travel Times

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The relatively new technology of Bluetooth address matching to gain an understanding of a single vehicle’s elapsed travel time between two monitoring points has been developed and brought to market only about 5 years ago. A handful of vendors are in this market space, and each has a product solution that can provide this basic outcome. Even though this abstract submittal is from one of those vendors, this presentation will be short on “sales pitch” for the Iteris Velocity system, and instead will be long on describing the many uses that an agency should expect from this technology. The needs of a transportation network owner have evolved in the past decade from one of building and expanding, to one where the primary focus is on managing and optimizing. One might envision using travel time information only to populate a real-time map to give a live snapshot of network congestion. But, there are many other ways these data can be leveraged.

- One such example is pulling these data into a performance measurement software program to assist in travel time demand models and origin-destination studies. Agencies are doing extensive work with ingesting travel time data (and other detector data) within performance measurement software to assist with planning, performance, and measurement studies.
- Another prominent output of travel time data that is being evaluated by many agencies directly and automatically piping the data within an agency’s Advanced Traffic Management System (ATMS). This allows an operator to only have need for one software platform to perform daily activities, like traffic signal timing refinement and travel time evaluation. This has been a major focus of several agencies in the state of Missouri; including MoDOT, St. Charles County, and others. Live examples of this feature will be presented and explored.
- An additional use for Bluetooth data is in validation of travel time data from other product solutions. For example, the RE-ID project (sponsored by US DOT and supported by Caltrans), is using a Bluetooth-based system to validate travel time measurements obtained from re-identifying vehicles at adjacent loop detectors. In this case, the Bluetooth-derived travel times are seen as the ‘source of truth’ against which validation can occur. [Project website: https://safety.fhwa.dot.gov/research/tfhrp/projects/projectsdb/projectdetails.cfm?projectid=FHA-PROJ-10-0086]
- Rural applications of this type of data set are numerous, but on a cost-basis, this technology is very cost effective when compared with other technologies deployed on rural roadways for travel time collection. Benefits and features of this technology specific to rural applications will be presented.
- Yet another is shrinking the link distance between monitoring points down to about ¼ mile, and using the data in highway construction work zones to identify slowdowns and queue build-ups, so that warning messages about “stopped traffic ahead” can be displayed on portable, changeable message signs.

This presentation will educate the audience about the many ways that Bluetooth address-matching technology can be utilized to improve their agencies’ management and optimization efforts. In addition to utilizing Bluetooth MAC address data, the presentation will also present pros and cons of collecting Wi-Fi-enabled device MAC addresses, which is a recent data set that is being explored by the vendors in this space.